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L1	53	703/6.ccls. and @pd>"20060901"	US-PGPUB; USPAT; EPO; DERWENT	OR	OFF	2007/01/12 15:31

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<u>Visual simulation of smoke</u> - <u>group of 37 »</u>
R Fedkiw, J Stam, HW Jensen - Proceedings of the 28th annual conference on Computer ..., 2001 -
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... The key to realistic **animation** of **smoke** is to make it look like a passive natural
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A Treuille, A McNamara, Z Popović, J Stam - ACM Transactions on Graphics (TOG), 2003 - portal.acm.org
... ior of the **animation**. One may manipulate the initial specifications of the simulation,
such as viscosity, temperature, location and quan- tity of **smoke**, but ...
<u>Cited by 57</u> - <u>Related Articles</u> - <u>Web Search</u> - <u>BL Direct</u>

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N Max, B Becker, R Crawfis - Visualization, 1993. Visualization'93, Proceedings., IEEE ..., 1993 -
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... The flow past a **smoke** or dye generator advects the tracer substance into a flow ... The
result is an image or interactive **animation** simulat- ing the results of the ...
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R Mizuno, Y Dobashi, T Nishita - Proc. of International Computer Symposium 2002, 2002 - mizuno.org
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... for rendering scenes containing gaseous phenomena such as clouds, fog, and **smoke**. ...
1 James F. Blinn, Light reflection functions for **simulation** of clouds and ...
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... 9], with modifications and additions to support the 3D joystick interface, the
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A Treuille, A McNamara, Z Popović, J Stam - ACM Transactions on Graphics (TOG), 2003 - portal.acm.org
... Ideally, in the domain of **smoke simulation**, animators could specify a set
of suggestive keyframes describing the desired behav- ior. ...
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Forney, G.P.; Madrzykowski, D.; McGrattan, K.B.; Sheppard, L.;
Computer Graphics and Applications, IEEE
Volume 23, Issue 4, July-Aug. 2003 Page(s):6 - 13
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1 Keyframe control of smoke simulations

Adrien Treuille, Antoine McNamara, Zoran Popović, Jos Stam
July 2003 **ACM Transactions on Graphics (TOG)**, Volume 22 Issue 3
Publisher: ACM Press

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We describe a method for controlling smoke simulations through user-specified keyframes. To achieve the desired behavior, a continuous quasi-Newton optimization solves for appropriate "wind" forces to be applied to the underlying velocity field throughout the simulation. The cornerstone of our approach is a method to efficiently compute exact derivatives through the steps of a fluid simulation. We formulate an objective function corresponding to how well a simulation matches the user's keyframes ...

Keywords: fluid simulation, inverse control, optimization

2 Physically based modeling and animation of fire

Duc Quang Nguyen, Ronald Fedkiw, Henrik Wann Jensen
July 2002 **ACM Transactions on Graphics (TOG), Proceedings of the 29th annual conference on Computer graphics and interactive techniques SIGGRAPH '02**, Volume 21 Issue 3
Publisher: ACM Press

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We present a physically based method for modeling and animating fire. Our method is suitable for both smooth (laminar) and turbulent flames, and it can be used to animate the burning of either solid or gas fuels. We use the incompressible Navier-Stokes equations to independently model both vaporized fuel and hot gaseous products. We develop a physically based model for the expansion that takes·place when a vaporized fuel reacts to form hot gaseous products, and a related model for the similar ex ...

Keywords: blackbody radiation, chemical reaction, fire, flames, implicit surface, incompressible flow, smoke, stable fluids, vorticity confinement

3 Smoke simulation for large scale phenomena

Nick Rasmussen, Duc Quang Nguyen, Willi Geiger, Ronald Fedkiw
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